

RAW SEQUENCE LISTING  
PATENT APPLICATION US/08/147,912

#23

DATE: 01/07/94  
TIME: 14:49:26

INPUT SET: S811.raw

18x6w

## SEQUENCE LISTING

ENTERED

- 1  
2  
3 (1) General Information:  
4  
5 (i) APPLICANT: WAHL, DR., GEOFFREY M.  
6 O'GORMAN DR., STEPHEN V.  
7  
8 (ii) TITLE OF INVENTION: FLP-MEDIATED GENE MODIFICATION IN  
9 MAMMALIAN CELLS, AND COMPOSITIONS AND CELLS USEFUL  
10 THEREFOR  
11  
12 (iii) NUMBER OF SEQUENCES: 4  
13  
14 (iv) CORRESPONDENCE ADDRESS:  
15 (A) ADDRESSEE: PRETTY, SCHROEDER, BRUEGGEMANN & CLARK  
16 (B) STREET: 444 South Flower Street, Suite 2000  
17 (C) CITY: Los Angeles  
18 (D) STATE: CA  
19 (E) COUNTRY: USA  
20 (F) ZIP: 90071  
21  
22 (v) COMPUTER READABLE FORM:  
23 (A) MEDIUM TYPE: Floppy disk  
24 (B) COMPUTER: IBM PC compatible  
25 (C) OPERATING SYSTEM: PC-DOS/MS-DOS  
26 (D) SOFTWARE: PatentIn Release #1.0, Version #1.25  
27  
28 (vi) CURRENT APPLICATION DATA:  
29 (A) APPLICATION NUMBER: US/08/147,912  
30 (B) FILING DATE:  
31 (C) CLASSIFICATION:  
32  
33 (vii) PRIOR APPLICATION DATA:  
34 (A) APPLICATION NUMBER: US 07/666,252  
35 (B) FILING DATE: 08-MAR-1991  
36  
37 (viii) ATTORNEY/AGENT INFORMATION:  
38 (A) NAME: REITER MR., STEPHEN E.  
39 (B) REGISTRATION NUMBER: 31192  
40 (C) REFERENCE/DOCKET NUMBER: P31 8929  
41  
42 (ix) TELECOMMUNICATION INFORMATION:  
43 (A) TELEPHONE: (619) 535-9001  
44 (B) TELEFAX: (619) 535-8949  
45  
46  
47 (2) INFORMATION FOR SEQ ID NO:1:  
48  
49 (i) SEQUENCE CHARACTERISTICS:  
50 (A) LENGTH: 1380 base pairs  
51 (B) TYPE: nucleic acid

# RAW SEQUENCE LISTING PATENT APPLICATION US/08/147,912

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52          (C) STRANDEDNESS: single
53          (D) TOPOLOGY: linear
54
55      (ii) MOLECULE TYPE: DNA (genomic)
56
57
58      (vii) IMMEDIATE SOURCE:
59          (B) CLONE: NATIVE FLP
60
61      (ix) FEATURE:
62          (A) NAME/KEY: CDS
63          (B) LOCATION: 1..1269
64
65
66      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:
67
68      ATG CCA CAA TTT GAT ATA TTA TGT AAA ACA CCA CCT AAG GTG CTT GTT      48
69      Met Pro Gln Phe Asp Ile Leu Cys Lys Thr Pro Pro Lys Val Leu Val
70          1          5          10          15
71
72      CGT CAG TTT GTG GAA AGG TTT GAA AGA CCT TCA GGT GAG AAA ATA GCA      96
73      Arg Gln Phe Val Glu Arg Phe Glu Arg Pro Ser Gly Glu Lys Ile Ala
74          20          25          30
75
76      TTA TGT GCT GCT GAA CTA ACC TAT TTA TGT TGG ATG ATT ACA CAT AAC      144
77      Leu Cys Ala Ala Glu Leu Thr Tyr Leu Cys Trp Met Ile Thr His Asn
78          35          40          45
79
80      GGA ACA GCA ATC AAG AGA GCC ACA TTC ATG AGC TAT AAT ACT ATC ATA      192
81      Gly Thr Ala Ile Lys Arg Ala Thr Phe Met Ser Tyr Asn Thr Ile Ile
82          50          55          60
83
84      AGC AAT TCG CTG AGT TTC GAT ATT GTC AAT AAA TCA CTC CAG TTT AAA      240
85      Ser Asn Ser Leu Ser Phe Asp Ile Val Asn Lys Ser Leu Gln Phe Lys
86          65          70          75          80
87
88      TAC AAG ACG CAA AAA GCA ACA ATT CTG GAA GCC TCA TTA AAG AAA TTG      288
89      Tyr Lys Thr Gln Lys Ala Thr Ile Leu Glu Ala Ser Leu Lys Lys Leu
90          85          90          95
91
92      ATT CCT GCT TGG GAA TTT ACA ATT ATT CCT TAC TAT GGA CAA AAA CAT      336
93      Ile Pro Ala Trp Glu Phe Thr Ile Ile Pro Tyr Tyr Gly Gln Lys His
94          100          105          110
95
96      CAA TCT GAT ATC ACT GAT ATT GTA AGT AGT TTG CAA TTA CAG TTC GAA      384
97      Gln Ser Asp Ile Thr Asp Ile Val Ser Ser Leu Gln Leu Gln Phe Glu
98          115          120          125
99
100     TCA TCG GAA GAA GCA GAT AAG GGA AAT AGC CAC AGT AAA AAA ATG CTT      432
101     Ser Ser Glu Glu Ala Asp Lys Gly Asn Ser His Ser Lys Lys Met Leu
102         130          135          140

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# RAW SEQUENCE LISTING PATENT APPLICATION US/08/147,912

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103																		
104	AAA	GCA	CTT	CTA	AGT	GAG	GGT	GAA	AGC	ATC	TGG	GAG	ATC	ACT	GAG	AAA		480
105	Lys	Ala	Leu	Leu	Ser	Glu	Gly	Glu	Ser	Ile	Trp	Glu	Ile	Thr	Glu	Lys		
106	145					150					155					160		
107																		
108	ATA	CTA	AAT	TCG	TTT	GAG	TAT	ACT	TCG	AGA	TTT	ACA	AAA	ACA	AAA	ACT		528
109	Ile	Leu	Asn	Ser	Phe	Glu	Tyr	Thr	Ser	Arg	Phe	Thr	Lys	Thr	Lys	Thr		
110					165					170						175		
111																		
112	TTA	TAC	CAA	TTC	CTC	TTC	CTA	GCT	ACT	TTC	ATC	AAT	TGT	GGA	AGA	TTC		576
113	Leu	Tyr	Gln	Phe	Leu	Phe	Leu	Ala	Thr	Phe	Ile	Asn	Cys	Gly	Arg	Phe		
114				180					185					190				
115																		
116	AGC	GAT	ATT	AAG	AAC	GTT	GAT	CCG	AAA	TCA	TTT	AAA	TTA	GTC	CAA	AAT		624
117	Ser	Asp	Ile	Lys	Asn	Val	Asp	Pro	Lys	Ser	Phe	Lys	Leu	Val	Gln	Asn		
118			195					200					205					
119																		
120	AAG	TAT	CTG	GGA	GTA	ATA	ATC	CAG	TGT	TTA	GTG	ACA	GAG	ACA	AAG	ACA		672
121	Lys	Tyr	Leu	Gly	Val	Ile	Ile	Gln	Cys	Leu	Val	Thr	Glu	Thr	Lys	Thr		
122			210				215					220						
123																		
124	AGC	GTT	AGT	AGG	CAC	ATA	TAC	TTC	TTT	AGC	GCA	AGG	GGT	AGG	ATC	GAT		720
125	Ser	Val	Ser	Arg	His	Ile	Tyr	Phe	Phe	Ser	Ala	Arg	Gly	Arg	Ile	Asp		
126	225					230					235					240		
127																		
128	CCA	CTT	GTA	TAT	TTG	GAT	GAA	TTT	TTG	AGG	AAT	TCT	GAA	CCA	GTC	CTA		768
129	Pro	Leu	Val	Tyr	Leu	Asp	Glu	Phe	Leu	Arg	Asn	Ser	Glu	Pro	Val	Leu		
130					245					250					255			
131																		
132	AAA	CGA	GTA	AAT	AGG	ACC	GGC	AAT	TCT	TCA	AGC	AAT	AAA	CAG	GAA	TAC		816
133	Lys	Arg	Val	Asn	Arg	Thr	Gly	Asn	Ser	Ser	Ser	Asn	Lys	Gln	Glu	Tyr		
134				260				265						270				
135																		
136	CAA	TTA	TTA	AAA	GAT	AAC	TTA	GTC	AGA	TCG	TAC	AAT	AAA	GCT	TTG	AAG		864
137	Gln	Leu	Leu	Lys	Asp	Asn	Leu	Val	Arg	Ser	Tyr	Asn	Lys	Ala	Leu	Lys		
138			275				280						285					
139																		
140	AAA	AAT	GCG	CCT	TAT	TCA	ATC	TTT	GCT	ATA	AAA	AAT	GGC	CCA	AAA	TCT		912
141	Lys	Asn	Ala	Pro	Tyr	Ser	Ile	Phe	Ala	Ile	Lys	Asn	Gly	Pro	Lys	Ser		
142		290					295					300						
143																		
144	CAC	ATT	GGA	AGA	CAT	TTG	ATG	ACC	TCA	TTT	CTT	TCA	ATG	AAG	GGC	CTA		960
145	His	Ile	Gly	Arg	His	Leu	Met	Thr	Ser	Phe	Leu	Ser	Met	Lys	Gly	Leu		
146	305					310					315					320		
147																		
148	ACG	GAG	TTG	ACT	AAT	GTT	GTG	GGA	AAT	TGG	AGC	GAT	AAG	CGT	GCT	TCT		1008
149	Thr	Glu	Leu	Thr	Asn	Val	Val	Gly	Asn	Trp	Ser	Asp	Lys	Arg	Ala	Ser		
150					325					330					335			
151																		
152	GCC	GTG	GCC	AGG	ACA	ACG	TAT	ACT	CAT	CAG	ATA	ACA	GCA	ATA	CCT	GAT		1056
153	Ala	Val	Ala	Arg	Thr	Thr	Tyr	Thr	His	Gln	Ile	Thr	Ala	Ile	Pro	Asp		

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154          340          345          350
155
156 CAC TAC TTC GCA CTA GTT TCT CGG TAC TAT GCA TAT GAT CCA ATA TCA      1104
157 His Tyr Phe Ala Leu Val Ser Arg Tyr Tyr Ala Tyr Asp Pro Ile Ser
158          355          360          365
159
160 AAG GAA ATG ATA GCA TTG AAG GAT GAG ACT AAT CCA ATT GAG GAG TGG      1152
161 Lys Glu Met Ile Ala Leu Lys Asp Glu Thr Asn Pro Ile Glu Glu Trp
162          370          375          380
163
164 CAG CAT ATA GAA CAG CTA AAG GGT AGT GCT GAA GGA AGC ATA CGA TAC      1200
165 Gln His Ile Glu Gln Leu Lys Gly Ser Ala Glu Gly Ser Ile Arg Tyr
166 385          390          395          400
167
168 CCC GCA TGG AAT GGG ATA ATA TCA CAG GAG GTA CTA GAC TAC CTT TCA      1248
169 Pro Ala Trp Asn Gly Ile Ile Ser Gln Glu Val Leu Asp Tyr Leu Ser
170          405          410          415
171
172 TCC TAC ATA AAT AGA CGC ATA TAAGTACGCA TTTAAGCATA AACACGCACT      1299
173 Ser Tyr Ile Asn Arg Arg Ile
174          420
175
176 ATGCCGTTCT TCTCATGTAT ATATATATAC AGGCAACACG CAGATATAGG TGCGACGTGA      1359
177
178 ACAGTGAGCT GTATGTGCGC A      1380
179
180
181 (2) INFORMATION FOR SEQ ID NO:2:
182
183 (i) SEQUENCE CHARACTERISTICS:
184 (A) LENGTH: 423 amino acids
185 (B) TYPE: amino acid
186 (D) TOPOLOGY: linear
187
188 (ii) MOLECULE TYPE: protein
189
190 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:
191
192 Met Pro Gln Phe Asp Ile Leu Cys Lys Thr Pro Pro Lys Val Leu Val
193 1          5          10          15
194
195 Arg Gln Phe Val Glu Arg Phe Glu Arg Pro Ser Gly Glu Lys Ile Ala
196          20          25          30
197
198 Leu Cys Ala Ala Glu Leu Thr Tyr Leu Cys Trp Met Ile Thr His Asn
199          35          40          45
200
201 Gly Thr Ala Ile Lys Arg Ala Thr Phe Met Ser Tyr Asn Thr Ile Ile
202          50          55          60
203
204 Ser Asn Ser Leu Ser Phe Asp Ile Val Asn Lys Ser Leu Gln Phe Lys

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# RAW SEQUENCE LISTING PATENT APPLICATION US/08/147,912

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205	65				70					75					80	
206																
207	Tyr	Lys	Thr	Gln	Lys	Ala	Thr	Ile	Leu	Glu	Ala	Ser	Leu	Lys	Lys	Leu
208					85					90					95	
209																
210	Ile	Pro	Ala	Trp	Glu	Phe	Thr	Ile	Ile	Pro	Tyr	Tyr	Gly	Gln	Lys	His
211				100					105					110		
212																
213	Gln	Ser	Asp	Ile	Thr	Asp	Ile	Val	Ser	Ser	Leu	Gln	Leu	Gln	Phe	Glu
214			115					120					125			
215																
216	Ser	Ser	Glu	Glu	Ala	Asp	Lys	Gly	Asn	Ser	His	Ser	Lys	Lys	Met	Leu
217		130					135					140				
218																
219	Lys	Ala	Leu	Leu	Ser	Glu	Gly	Glu	Ser	Ile	Trp	Glu	Ile	Thr	Glu	Lys
220	145					150					155					160
221																
222	Ile	Leu	Asn	Ser	Phe	Glu	Tyr	Thr	Ser	Arg	Phe	Thr	Lys	Thr	Lys	Thr
223					165					170					175	
224																
225	Leu	Tyr	Gln	Phe	Leu	Phe	Leu	Ala	Thr	Phe	Ile	Asn	Cys	Gly	Arg	Phe
226				180					185					190		
227																
228	Ser	Asp	Ile	Lys	Asn	Val	Asp	Pro	Lys	Ser	Phe	Lys	Leu	Val	Gln	Asn
229		195						200					205			
230																
231	Lys	Tyr	Leu	Gly	Val	Ile	Ile	Gln	Cys	Leu	Val	Thr	Glu	Thr	Lys	Thr
232		210					215					220				
233																
234	Ser	Val	Ser	Arg	His	Ile	Tyr	Phe	Phe	Ser	Ala	Arg	Gly	Arg	Ile	Asp
235	225					230					235					240
236																
237	Pro	Leu	Val	Tyr	Leu	Asp	Glu	Phe	Leu	Arg	Asn	Ser	Glu	Pro	Val	Leu
238					245					250					255	
239																
240	Lys	Arg	Val	Asn	Arg	Thr	Gly	Asn	Ser	Ser	Ser	Asn	Lys	Gln	Glu	Tyr
241				260				265						270		
242																
243	Gln	Leu	Leu	Lys	Asp	Asn	Leu	Val	Arg	Ser	Tyr	Asn	Lys	Ala	Leu	Lys
244			275					280					285			
245																
246	Lys	Asn	Ala	Pro	Tyr	Ser	Ile	Phe	Ala	Ile	Lys	Asn	Gly	Pro	Lys	Ser
247		290					295					300				
248																
249	His	Ile	Gly	Arg	His	Leu	Met	Thr	Ser	Phe	Leu	Ser	Met	Lys	Gly	Leu
250	305					310					315					320
251																
252	Thr	Glu	Leu	Thr	Asn	Val	Val	Gly	Asn	Trp	Ser	Asp	Lys	Arg	Ala	Ser
253					325					330					335	
254																
255	Ala	Val	Ala	Arg	Thr	Thr	Tyr	Thr	His	Gln	Ile	Thr	Ala	Ile	Pro	Asp

RAW SEQUENCE LISTING  
PATENT APPLICATION US/08/147,912DATE: 01/07/94  
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```
256          340          345          350
257
258 His Tyr Phe Ala Leu Val Ser Arg Tyr Tyr Ala Tyr Asp Pro Ile Ser
259          355          360          365
260
261 Lys Glu Met Ile Ala Leu Lys Asp Glu Thr Asn Pro Ile Glu Glu Trp
262          370          375          380
263
264 Gln His Ile Glu Gln Leu Lys Gly Ser Ala Glu Gly Ser Ile Arg Tyr
265          385          390          395          400
266
267 Pro Ala Trp Asn Gly Ile Ile Ser Gln Glu Val Leu Asp Tyr Leu Ser
268          405          410          415
269
270 Ser Tyr Ile Asn Arg Arg Ile
271          420
272
```

## (2) INFORMATION FOR SEQ ID NO:3:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 34 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: unknown

(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: cDNA

## (vi) ORIGINAL SOURCE:

(C) INDIVIDUAL ISOLATE: FLP recombination target site

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

GAAGTTCCTA TTCTCTAGAA AGTATAGGAA CTTC

34

## (2) INFORMATION FOR SEQ ID NO:4:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 68 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: unknown

(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: cDNA

## (vi) ORIGINAL SOURCE:

(C) INDIVIDUAL ISOLATE: Synthetic oligonucleotide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

PAGE: 7

**RAW SEQUENCE LISTING**  
**PATENT APPLICATION US/08/147,912**

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*INPUT SET: S811.raw*

307	GATCCCGGGC TACCATGGAG AAGTTCCTAT TCCGAAGTTC CTATTCTCTA GAAAGTATAG	60
308		
309	GAACTTCA	68
310		

PAGE: 1

**SEQUENCE VERIFICATION REPORT**  
**PATENT APPLICATION US/08/147,912**

DATE: 01/07/94  
TIME: 14:50:11

*INPUT SET: S811.raw*

Line

Error

Original Text



PAGE: 1

**SEQUENCE MISSING ITEM REPORT**  
**PATENT APPLICATION US/08/147,912**

DATE: 01/07/94  
TIME: 14:50:11

*INPUT SET: S811.raw*

< < THERE ARE NO ITEMS MISSING > >

PAGE: 1

**SEQUENCE CORRECTION REPORT**  
**PATENT APPLICATION US/08/147,912**

DATE: 01/07/94  
TIME: 14:50:12

*INPUT SET: S811.raw*

Line	Original Text	Corrected Text
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